SECTION 8: EVALUATION OF ALTERNATIVES

8.1 NO ACTION ALTERNATIVE

Flows from the DRG Water Quality Treatment Center (WQTC) dry weather service area are projected to grow by approximately 5.7 MGD during the planning period of 2016 – 2036. As described in Section 7, this growth is a combination of infill in the existing service area, and existing onsite treatment being eliminated by new sewer service.

In the wet weather service area, flows will increase primarily as a result of Integrated Overflow Abatement Plan (IOAP) projects bringing additional portions of the sanitary sewer service area of the Upper Middle Fork basin into the DRG WQTC service area through the Northern Ditch Diversion. The combination of wet weather flow diversions and population growth primarily related to infill of the existing service area will increase the average annual flow contribution from the wet weather service area over the planning period. In 2012, the wet weather flow diversions began to add to the annual average flow because of the diversion during wet weather. By 2036, the wet weather flow diversions are projected to bring the total annual average flow to 59.9 MGD (with 34.6 MGD coming from the dry weather service area).

To accommodate the projected growth, modifications to the collection system will be required. The "No Action" alternative is not viable relative to the collection system. If action is not taken, growth in the service area will not be possible. Collection system projects divided into development zones are shown in Figure 8-1.

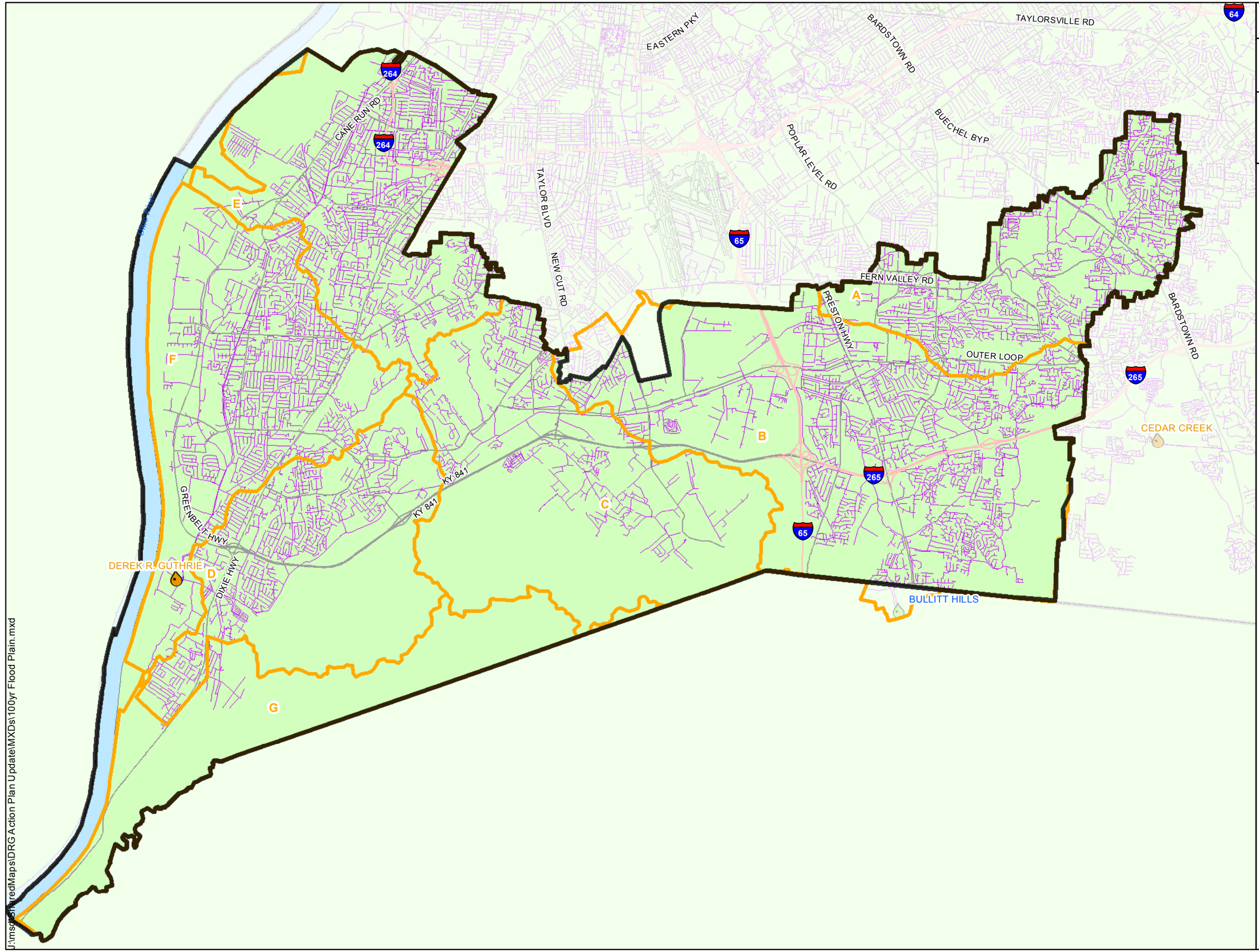
The current treatment capacity at the DRG WQTC is adequate to accommodate the projected growth within the existing facilities. While annual average flows are projected to increase by 85%, the peak flow taken through treatment will remain fixed at a maximum of 200 MGD. The IOAP projects, including the flow equalization basin at the DRG WQTC were sized to control peak wet weather flows at the plant to 200 MGD or less throughout the planning period.

In the expansion completed in 2012, the treatment units were sized based on the "worst case" of dry weather loads, annual average loads including the impact of the wet weather diversions, or peak loads during wet weather. The wet weather peak loads controlled the unit process sizing in almost every case. The one exception to this is return activated sludge (RAS) pumping. The current RAS firm pumping capacity of 42 MGD was deemed adequate for the rated dry weather flow of 30 MGD. The KDOW design standards, however, require contact stabilization activated sludge plants to have RAS pumping capacity up to 150% of design average flow. A design is underway to replace both of the 8 MGD RAS pumps with 23 MGD RAS pumps will give a firm pumping capacity of 72.0 MGD. While this does not meet Ten

Figure: 8-1

DEREK R. GUTHRIE REGIONAL FACILITES PLAN
LOUISVILLE AND JEFFERSON COUNTY
METROPOLITAN SEWER DISTRICT

COLLECTION SYSTEM



- MSD Regional Treatment Plant
- MSD Treatment Plant
- Private Treatment Plant
- Streams
- Expressway
- Major Roads
- Jefferson County Boundary
- Pond Creek Watershed
- Mill Creek Watershed
- Planning Area Boundary
- DRG Zones
- Sewers

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1 inch equals 1.5 miles

Map Prepared by MSD GIS Services and Records

Map Created: 7-APR-2017

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States Standards for an average annual flow of 60 MGD, detailed process modeling confirmed by post construction model calibration has demonstrated that this RAS capacity is adequate for the conditions expected when wet weather causes diversion from the wet weather service area. Since future dry weather flows are projected to only reach 34.6 MGD by the end of the planning period, RAS pumping capacity will be adequate for the duration of the planning period.

Table 8-1 compares the projected loads during the planning period to the design loads of the existing facilities. This demonstrates that the wet weather peak loads control capacity requirements. Peak BOD and NH3 loads are within 0.5% of the plant capacity documented in the Construction Permit Application dated July 15, 2009. This is well within the accuracy limits of both the load projections and the capacity determination. Based on the load comparisons in Table 8-1, the existing capacity of the plant is adequate to meet future loading conditions. As noted previously, MSD has a project underway to increase RAS pumping.

Table 8-1 Projected 2036 DRG WQTC Load vs. Treatment Design Capacity

Flow Condition	Flow MGD	BOD Lbs/day	TSS Lbs/day	NH3 Lbs/day	O2 Demand Lbs/day
Dry Weather Annual Average	34.6	59,501	74,376	4,212	84,828
Total Service Area Annual Average	59.9	90,611	107,847	6,796	130,932
Peak Wet Weather Flow to Treatment	200.0	145,116	176,808	8,340	159,628[(2)]
Existing WQTC Capacity[(1)]	**220.5**	**144,400**	**177,300**	**8,326**	**178,587**

[(1)]Capacity values per Construction Permit Application dated July 15, 2009
[(2)]Assumes no nitrification occurs during peak wet weather flows

8.1.1 Unit Process Description

A detailed project description of the existing plant unit processes is presented in Section 6.2. With the exception of increased RAS pumping, the previous description accurately describes the unit processes anticipated throughout the planning period, and modifications recommended to improve operations and maintenance of those facilities.

8.2 OPTIMIZATION OF EXISTING FACILITIES

8.2.1 WQTC Facility Optimization

As noted in the previous section, the existing WQTC facilities have adequate capacity to meet the maximum loading conditions anticipated during the planning period. Other than the current project to expand the RAS pumping, no other major WQTC modifications are required for capacity. Modifications to the piping between the grit basins and aeration basins, adding isolation gates in the Aeration Basins No. 1-4 influent channels and upsizing or providing parallel relief piping for the discharge from the expanded RAS pumping system are also recommended, but not required to achieve required capacity. It is expected that routine renewal and replacement of facilities will occur consistent with good asset management practice.

8.3 REGIONALIZATION

8.3.1 Regionalization Through Real Time Control Operation of Collection System

As described in Section 7, the DRG WQTC plays a key role in the system-wide flow management strategy of the IOAP. During dry weather, the service area boundaries are similar to current boundaries, except for expansion and infill areas as described in Section 7. During wet weather, however, a significant portion of the MF WQTC service area that is served by separate sanitary sewers will be routed away from the Southeast Diversion Structure and the Northern Ditch Pump Station, and sent to the DRG WQTC instead. Figure 8-2 illustrates a schematic of this flow routing and control facilities.

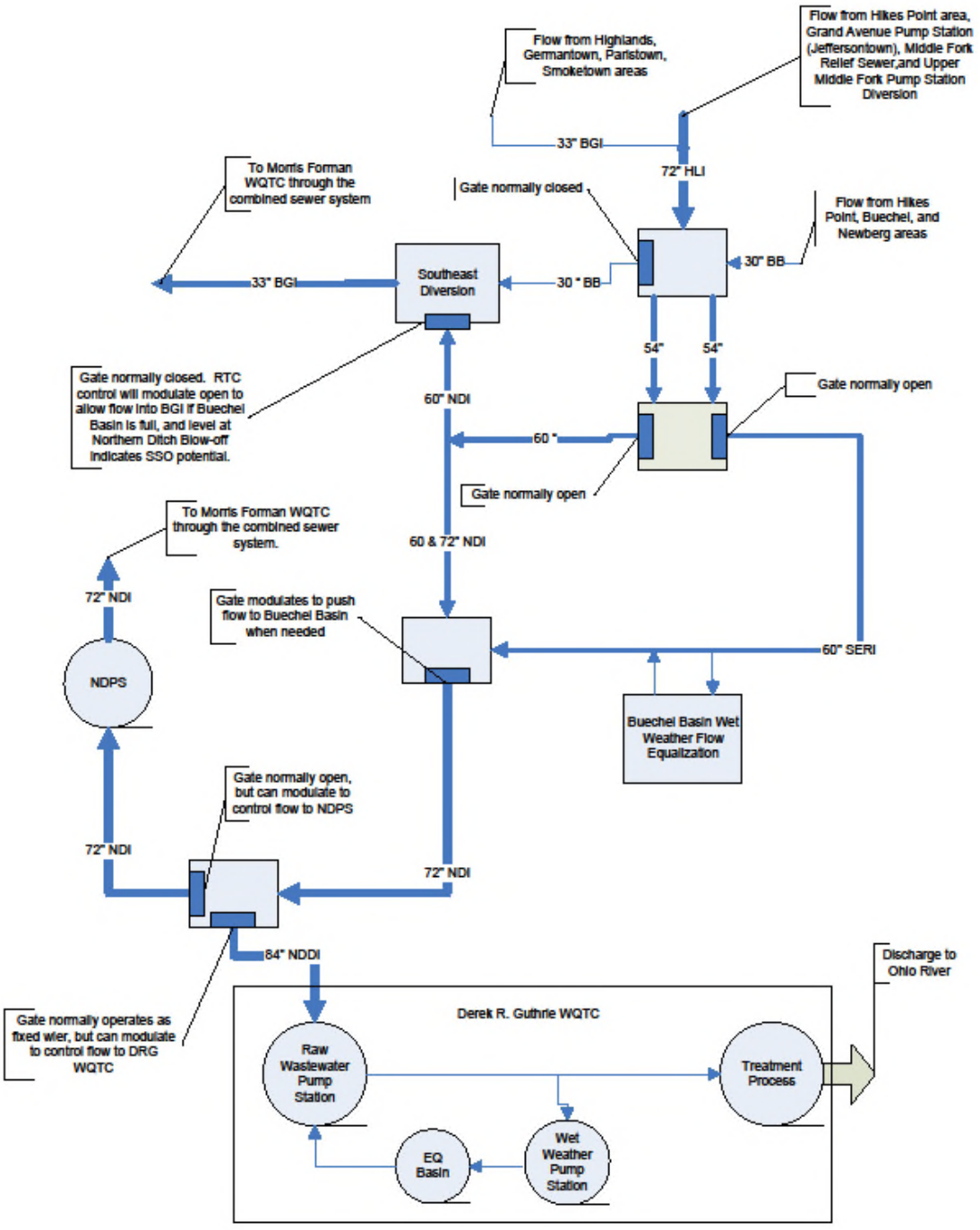


Figure 8-2 DRG Diversion Flow Schematic

Control of this flow routing strategy will be accomplished primarily by the Real Time Control (RTC) system that MSD has used since 2006 to optimize use of its conveyance and treatment system. The general regional control concept is as follows:

- Dry weather – DRG WQTC receives flow from dry weather service area only. MF WQTC receives flow from the Hikes Lane Interceptor (HLI), Buechel Branch (BB), and Beargrass Interceptor (BGI) either through Southeast Diversion or Northern Ditch Pump Station.
- Wet weather – HLI, BB, and BGI are routed around the Southeast Diversion to the Northern Ditch Interceptor (NDI). BB may begin to equalize flow in the NDI when water level indicates the potential for surcharging or risk of SSOs. Northern Ditch Diversion structure maximizes flow from NDI to the Northern Ditch Diversion Interceptor and then to the DRG WQTC.
- For wet weather flows up to 200 MGD, the Raw Wastewater Pump Station delivers flow to the treatment process. As flows exceed 200 MGD, the Wet Weather Pump Station begins to send flow to the Short-Term Detention Basin and the Equalization Basin for storage. If flows continue to exceed 200 MGD and the Equalization Basin approaches being full, control gates on the NDI will limit flows passing to the Northern Ditch Diversion by pushing peak flows to the Buechel Basin.
- If wet weather flows in excess of 200 MGD continue and both the Equalization Basin and the Buechel Basin are full, the RTC system will start sending more flow to the Northern Ditch Pump Station, sending the excess flow to the MF WQTC. When all these flow paths are at maximum capacity, a gate on the Southeast Diversion Structure will open, allowing back-flow from the Southeast Interceptor Relief to go to the MF WQTC through the BGI.

This entire control strategy will be optimized based on flow and level measurements, rainfall measurements and predictions, and control logic that optimizes use of MSDs conveyance and treatment facilities in both the DRG WQTC and MF WQTC service areas.

8.4 RECOMMENDED TREATMENT ALTERNATIVE

No additional alternatives were explored due to the work completed as part of the IOAP Wet Weather expansion at the DRG WQTC. Since the work is already complete, no cost analysis was prepared.

The recommended alternative for the DRG WQTC is to continue to use the existing facilities upgraded in a series of construction projects completed in 2012. To achieve this rated capacity

of 60 MGD, both of the 8 MGD RAS pumps are being replaced with 23 MGD pumps. The RAS building is shown in figure 8-4 as part of the plant operations schematic. Upgrading the pumps will require interior piping and electrical modifications. The total cost for this work is estimated at $2,000,000. These improvements will allow for the dry weather flow capacity to be increased to 60 MGD.

As noted in Section 6.2.5 and Section 6.2.6, two of the 42-inch lines between the grit basins and the aeration basins should have gates added at each end to allow them to be isolated from the flow stream. Gates should also be added to the aeration basin influent channel in place of the existing stop logs, to facilitate channel cleaning and maintenance. These improvements are estimated to cost $600,000 (all costs are indexed to 2012 dollars). While these improvements do not affect the rated capacity of the facility, they are recommended to allow for ease of maintenance.

In addition to the improvements that deal with capacity, the following items are recommended for evaluation and rebuild or replacement during the planning period:

- HVAC systems in the Wet Weather Pump Station, Screening Building, and Grit Building
- Wet Weather Screen Building screens
- 60-inch air supply line from the Blower Building to the Aeration Basins (if indicated by a comprehensive condition assessment)
- Aeration Basin air distribution piping and drops, including leaking gaskets and other corrective measures
- Elevators in the Wet Weather Pump Station and Wet Weather Screen Building
- Bio-Rem odor control unit rehabilitation, including the bed and the W-2 water system
- West County Force Main Condition assessment

These rebuild/replacement items do not affect the rated capacity of the facility, but are recommended for continued reliable operation. Costs for these will be estimated during the planning of these projects. Other non-process items of concern noted in Chapter 6 should also be addressed through corrective maintenance actions.

8.5 COLLECTION SYSTEM ALTERNATIVES

Conveyance alternatives for future flow were evaluated for the DRG WQTC dry weather service area by zone. Each zone was analyzed to determine areas that would require a 12-inch diameter or larger interceptor based on future peak flow from anticipated future development. The cost analysis for the collection system was based on a costing tool that MSD has used in

the planning and completion of its IOAP. This planning tool allows MSD to estimate capital and present worth costs for pipes with consideration to the pipe depth, pipe size and surface conditions, as well as pump stations, force mains and sewer storage systems. A summary of the projects and project alternatives, their zones and the estimated capital costs is in the Table 8-2 below and shown on a map on Figure 8-3. The chosen alternatives are highlighted in gray. Beyond the new interceptors and pump stations to capture future development flow, projects that were developed to eliminate SSOs are also outlined in Table 8-3. The SSO abatement project alternatives were evaluated as a part of MSD's IOAP, using a benefit-cost analysis. Table 8-4 shows assessment projects for areas of expanded sewer service. The selected alternatives are shown on Figure 8-3.

Table 8-2 Future Development Project Alternatives

Project	Zone	Capital Cost	Project Start
Bear Camp Creek Interceptor	C	$4,473,000	3-10 years
Jefferson Hill Road Interceptor	C	$4,017,000	3-10 years
Bear Camp Creek and Jefferson Hill Road Combination Interceptor	C	$11,452,000	
Crane Run Interceptor and Pump Station	D	$4,338,000	
Briar Creek Interceptor and Pump Station	G	$11,610,000	
Crane Creek to Briar Creek Combination Project	D and G	$14,927,000	11-20 years
Cane Run Creek Interceptor	E	$727,000	11-20 years
Riverside Gardens Pump Station Expansion	E	$1,891,000	11-20 years
Greenbelt Highway Interceptor	F	$2,149,000	11-20 years
Bethany Lane Pump Station	F	$2,734,000	
The projects highlighted in gray are the selected alternatives discussed in Section 8.6.			

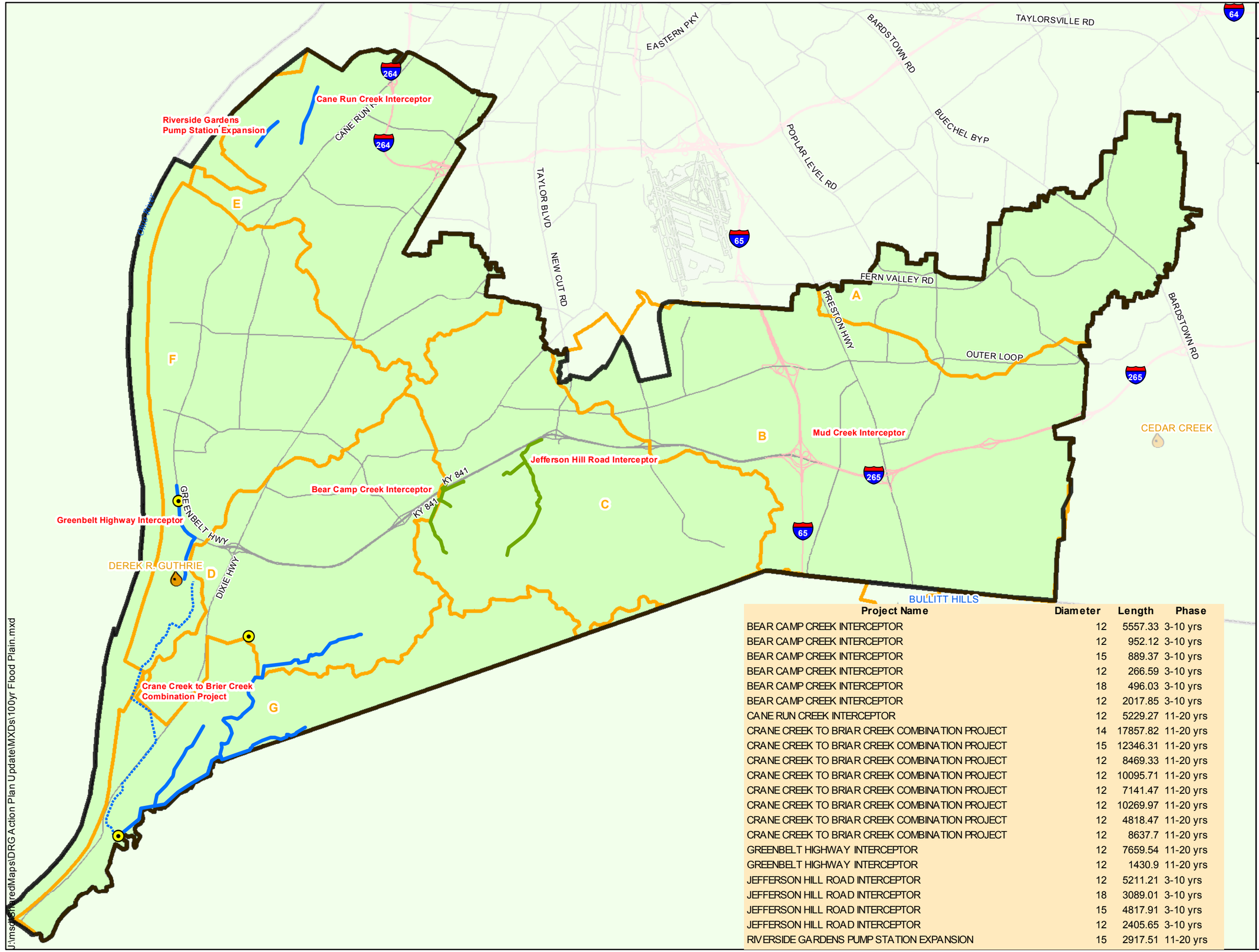
Table 8-3 IOAP Projects

Project	**Zone**	**Capital Cost**	**Project Start**
Cinderella PS Elimination	B	$1,427,000	3-10 years
Leven PS Elimination	B	$4,017,000	3-10 years

Figure: 8-3

DEREK R. GUTHRIE REGIONAL FACILITES PLAN
LOUISVILLE AND JEFFERSON COUNTY
METROPOLITAN SEWER DISTRICT

PROPOSED SEWER/PUMP STATION



Project Name	Diameter	Length	Phase
BEAR CAMP CREEK INTERCEPTOR	12	5557.33	3-10 yrs
BEAR CAMP CREEK INTERCEPTOR	12	952.12	3-10 yrs
BEAR CAMP CREEK INTERCEPTOR	15	889.37	3-10 yrs
BEAR CAMP CREEK INTERCEPTOR	12	266.59	3-10 yrs
BEAR CAMP CREEK INTERCEPTOR	18	496.03	3-10 yrs
BEAR CAMP CREEK INTERCEPTOR	12	2017.85	3-10 yrs
CANE RUN CREEK INTERCEPTOR	12	5229.27	11-20 yrs
CRANE CREEK TO BRIAR CREEK COMBINATION PROJECT	14	17857.82	11-20 yrs
CRANE CREEK TO BRIAR CREEK COMBINATION PROJECT	15	12346.31	11-20 yrs
CRANE CREEK TO BRIAR CREEK COMBINATION PROJECT	12	8469.33	11-20 yrs
CRANE CREEK TO BRIAR CREEK COMBINATION PROJECT	12	10095.71	11-20 yrs
CRANE CREEK TO BRIAR CREEK COMBINATION PROJECT	12	7141.47	11-20 yrs
CRANE CREEK TO BRIAR CREEK COMBINATION PROJECT	12	10269.97	11-20 yrs
CRANE CREEK TO BRIAR CREEK COMBINATION PROJECT	12	4818.47	11-20 yrs
CRANE CREEK TO BRIAR CREEK COMBINATION PROJECT	12	8637.7	11-20 yrs
GREENBELT HIGHWAY INTERCEPTOR	12	7659.54	11-20 yrs
GREENBELT HIGHWAY INTERCEPTOR	12	1430.9	11-20 yrs
JEFFERSON HILL ROAD INTERCEPTOR	12	5211.21	3-10 yrs
JEFFERSON HILL ROAD INTERCEPTOR	18	3089.01	3-10 yrs
JEFFERSON HILL ROAD INTERCEPTOR	15	4817.91	3-10 yrs
JEFFERSON HILL ROAD INTERCEPTOR	12	2405.65	3-10 yrs
RIVERSIDE GARDENS PUMP STATION EXPANSION	15	2917.51	11-20 yrs

- MSD Regional Treatment Plant
- MSD Treatment Plant
- Private Treatment Plant
- Streams
- Expressway
- Major Roads
- Jefferson County Boundary
- Pond Creek Watershed
- Mill Creek Watershed
- New Pump Stations
- Forcemain, 11-20 yrs
- Interceptor, 11-20 yrs
- Interceptor, 3-10 yrs
- DRG Zones

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1 inch equals 1.5 miles

Map Prepared by MSD GIS Services and Records

Map Created: 7-APR-2017

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Table 8-4 Assessment Projects

Project	Zone	Capital Cost	Project Start
Briscoe Lane Sanitary Sewer	A	$4,271,000	11-20 years
Fegenbush Ln Sanitary Sewer	A	$609,000	11-20 years
Chenoweth Run Sanitary Sewer	A	$331,000	11-20 years
Industrial Park Sanitary Sewer	A	$760,000	11-20 years
Mud Ln. Sanitary Sewer Assessment	B	$1,121,000	11-20 years
Knopp Melton Phase 2 Sanitary	B	$822,000	11-20 years
National Turnpike Sanitary Sewer	B	$1,410,000	11-20 years
Jefferson Hill Pump Station	C	$1,725,000	11-20 years
Blevin Gap Road East Sanitary	C	$1,763,000	11-20 years
Blevin Gap Road West Sanitary	C	$1,763,500	11-20 years
St. Anthony Church Road Sanitary	C	$1,410,000	11-20 years
Mooreman Road Sanitary Sewer and Drainage	D	$290,000	11-20 years

8.6 RECOMMENDED COLLECTION SYSTEM ALTERNATIVES

All areas of development that would need 12” interceptors or greater for future development were evaluated by zone. A description and estimated capital cost are included in this section.

8.6.1 Zone A Development Projects

There are no current development projects in this zone.

8.6.2 Zone B Development Projects

There are no current development projects in this zone.

8.6.3 Zone C Development Projects

Bear Camp Run Interceptor - This proposed project includes an approximately 5,600 ft 12-inch diameter interceptor that runs along Bear Camp Road and picks up potential future development in that area. Two branches to the interceptor pick up flow from the area North and South of Blevins Gap Road. At the intersection of the branches, the interceptor is upsized to an 18-inch diameter line and is tunneled under KY 841 to connect into the 120-inch diameter Pond Creek Interceptor.

Total Estimated Capital Cost: $4,473,000

Jefferson Hill Pump Station Elimination - This proposed project will capture future development flow from the South along Jefferson Hill Rd with an approximately 5,200 ft 12-inch diameter interceptor. The existing Jefferson Hill Pump Station will be eliminated and a new approximately 4,800 ft 15-inch diameter interceptor will convey the flow to the north following the east side of Salt Block Creek. This interceptor will connect with an approximately 2,400 ft 12-inch diameter interceptor that will collect any future flow from the west along Penile Road. At the intersection of these two interceptors, flow will be conveyed North inside an 18-inch diameter line over to the existing 24-inch diameter Bee Lick Interceptor.
Total Estimated Capital Cost: $4,017,000

Alternative Analysis - An alternative to the two projects listed above was evaluated. The alternative includes some of the same interceptors but removes the 18-inch diameter connector line that runs between Penile Road and the Bee Lick Interceptor. The flow runs west along Penile Road inside an approximately 9,700 ft 18-inch diameter interceptor and connects into the Bear Camp Run interceptor. The downstream sections of the Bear Camp Run Interceptor are upsized to a 21-inch diameter interceptor.
Total Estimated Capital Cost: $11,452,000

The alternative capital cost for servicing future development in Zone C by combining the projects is $11,452,000 as opposed to the total capital cost for the two projects as separate entities being $8,490,000. The alternative of running flow from Jefferson Hill Pump Station to an interceptor West along Penile Road to connect with the Bear Camp Run Interceptor is more expensive. There is an additional $2,962,000 in cost for the alternative project.

8.6.4 Zone D and G Development Projects

Crane Run Interceptor and Pump Station - This proposed project includes several interceptors that will capture potential future development. An approximately 10,100 ft 12-inch diameter interceptor in Zone D will run west along Crane Run to collect future development flow and from there a 3,890 ft 12-inch diameter interceptor will run north to a proposed pump station near the confluence of Crane Run and Pond Creek. An approximately

2,700 ft 8-inch diameter force main will convey flow north into the existing 120-inch diameter Pond Creek Interceptor.
Total Estimated Capital Cost: $4,338,000

Briar Creek Interceptor - This proposed project is to capture future development flow in Southwestern Jefferson County. An approximately 8,600 ft 12-inch diameter interceptor will collect future development flow from areas surrounding Pauley's Gap Road and Pendleton Road. This interceptor will intersect with another proposed interceptor that is approximately 7,100 ft and runs south along the east side of Pond Creek. At the confluence of the two interceptors, an approximately 12,300 ft 15-inch diameter interceptor will run under Pond Creek and west along the north side of Pond Creek. Another 12-inch diameter interceptor connects into this 15-inch diameter interceptor and it flows along a tributary to Pond Creek to collect future development flow from an area around Bohannon Avenue and Lewis Lane. These interceptors flow to a proposed pump station on the north side of Sites Station Road. An approximately 27,400 ft force main will run north along the east side of Dixie Highway and then northwest across Lower River Road and then north to connect into the Pond Creek Interceptor just upstream of the DRG Water Quality Treatment Center.
Total Estimated Capital Cost: $11,610,000

Alternative - One alternative to provide future sewer service to these areas is to run the Crane Run Interceptor South across Crane Run and run it along Pond Creek to intersect with the proposed Briar Creek Interceptor. This would eliminate the need for a pump station at the confluence of Crane Run and Pond Creek as well as approximately 3,890 ft of interceptor and 2,700 ft of force main. The rest of the Briar Creek Project would have the same alignments and the force main size would increase to 14-inch diameter.
Total Estimated Capital Cost: $14,927,000

The alternative capital cost for servicing future development in zones D and G by combining the projects is $14,926,800 as opposed to the total capital cost for the two projects as separate entities being $15,947,940. The alternative will eliminate the need for the extra pump station and force main which will help reduce future maintenance and the initial cost is less.

8.6.5 Zone E Development Projects

Camp Ground Road Interceptor - This proposed project is to run an approximately 2,900 ft 15-inch diameter interceptor down Camp Ground Road in order to capture potential future development in the area. The interceptor would tie into the Riverside Gardens Pump Station. Both the pump station and force main would need to be upsized. The force main would need to be upsized to a 16-inch diameter pipe and the pump station resized to handle an additional 2.93 MGD.
Total Estimated Capital Cost: $1,891,000

Mill Creek Interceptor - This proposed project is to run an approximately 5,200 ft 15-inch diameter interceptor down Camp Ground Road in order to capture potential future development in the area. The interceptor would tie into an existing 30-inch interceptor.
Total Estimated Capital Cost: $727,000

8.6.6 Zone F Development Projects

Greenbelt Highway Interceptor – This proposed project is to run approximately 9,100 ft of 12-inch diameter interceptor adjacent to Greenbelt Hwy until it crosses Mill Creek. The proposed interceptor would follow west of Mill Creek and connect into the Pond Creek Interceptor just upstream of the DRG WQTC.
Total Estimated Capital Cost: $2,149,000

Alternate - Bethany Lane Pump Station - This proposed project alternative is to run an approximately 1,400 ft 12-inch diameter interceptor adjacent to the Greenbelt Hwy in order to capture potential future development in the area. A pump station would be constructed at the intersection of Bethany Lane and the Greenbelt Hwy. An approximately 3,900 ft of 6-inch force main would be constructed to tie into an existing 15-inch interceptor on Ashby Lane.
Total Estimated Capital Cost: $2,734,000

The alternative capital cost for servicing future development in zone F is $585,000 more expensive than the Greenbelt Highway Interceptor therefore the interceptor project was the chosen alternative.

SECTION 9: CROSS-CUTTER CORRESPONDENCE AND MITIGATION

9.1 THREATENED AND ENDANGERED SPECIES

A letter was sent to the Kentucky Department of Fish and Wildlife on October 30, 2017, requesting a review of significant concerns for local fish and wildlife resources or habitat with the proposed projects. A copy of the letter and the response from the Kentucky Department of Fish and Wildlife is included in Appendix A.

A letter was sent to the United States Fish and Wildlife on October 30, 2017, requesting a review of significant concerns for local fish and wildlife resources or habitat with the proposed projects. A copy of the letter and the response from the United States Fish and Wildlife is included in Appendix A.

9.2 HISTORICAL RESOURCES

A letter was sent to the Kentucky Heritage Council on October 30, 2017, requesting a review of significant cultural or historical concerns with the proposed projects. A copy of the letter and the response from the Heritage Council is included in Appendix A.

9.3 AQUATIC RESOURCES

A letter was sent to the United States Army Corp of Engineers (USACE) on October 30, 2017, requesting a review of significant concerns for wetlands and other jurisdictional interests for the proposed projects. A copy of the letter and the response from the USACE is included in Appendix A.

9.4 AGRICULTURAL RESOURCES

A letter was sent to the Natural Resources Conservation Service on October 30, 2017, requesting a review of significant concerns for wetlands and other jurisdictional interests for the proposed projects. A copy of the letter and the response from the USACE is included in Appendix A.

9.5 KENTUCKY CLEARING HOUSE REVIEW

The Kentucky Division of Water will prepare a State Planning and Environmental Assessment Report (SPEAR) that is distributed to the following agencies:

Kentucky Department of Public Health
Kentucky Department of Fish and Wildlife Resources
Kentucky Division of Air Quality
Kentucky Division of Forestry
Kentucky Division of Waste Management
Kentucky Division of Water

Kentucky Heritage Council
Kentucky State Clearinghouse
Natural Resources Conservation Service Web Soil Survey
Kentucky Geological Survey Website
United States Fish and Wildlife Service

Comments received from these agencies will be considered in approval of the Regional Wastewater Facilities Plan. MSD will satisfy all appropriate local, state and federal mitigation requirement associated with this DRG WQTC Facility Plan.

SECTION 10: EVALUATION OF RECOMMENDED REGIONAL FACILITY PLAN

10.1 ENVIRONMENTAL IMPACTS

The recommended alternative for the DRG WQTC is essentially complete, with little physical construction remaining. The work to be done onsite will have minor impact from construction traffic to the surrounding areas.

The recommended work for the collection/conveyance system will cause periodic disturbance across the service area. Each project will be evaluated for environmental and cultural impacts during planning and design. Public input will be solicited during the planning and design phases of each project.

10.2 INSTITUTIONAL STRUCTURE

MSD is public corporate body and subdivision of the Commonwealth of Kentucky. MSD has complete control, possession and supervision of the sewer and drainage system within the City of Louisville (the "City") and within large portions of Jefferson County (the "County"), which it has annexed into its service area. Chapter 76 of the Kentucky Revised Statutes authorizes MSD to construct additions, betterment's and extensions within its service area and to recover the costs of its services in accordance with rate schedules adopted by its Board.

10.3 FUNDING PLAN

MSD sets universal rates that fund its entire utility. Rates enable MSD to operate and maintain its separate sanitary sewer system, combined sewer system, regional WQTCs and small WQTCs. MSD's rates also fund compliance with its Amended Consent Decree (ACD).

MSD's current and near –term projected rates include budgets for the 0- to 2 year projects identified in this proposed plan and also include budgets for the SSDP projects. MSD's long term projected rates (as presented in the IOAP) include budgets for projects identified in the future. MSD will offset some of the annual allowances to incorporate budgets for projects identified in this proposed plan into future rate development calculations. Impacts on future long-term rates cannot be estimated at this time because of the uncertainty of other future projects that may be identified in other areas of MSD's operations and how those totals might be offset by existing budget allowances.

10.4 CURRENT AND PROJECTED RATE FEE

A copy of MSD's Wastewater service charges is shown in Appendix C. A 4,000 gallon per month sewer residential customer served by MSD currently pays a monthly sewer bill of $48.74. This includes a $11.26 surcharge for USEPA Consent Decree. MSD prepares an annual operating and capital budget every spring, which requires approval by the MSD Board. MSD also identifies the service charges needed to implement the approved operating and capital budgets. This also requires approval by the MSD Board, and under some circumstances requires approval from the Louisville Metro Council.

MSD has developed a 20-year Critical Repair and Reinvestment Plan that defines a recommended program for meeting MSD's regulatory and customer service requirements. The recommended projects identified in this RFP are included in that Plan, along with an overall financial strategy for funding. Implementation of the plan is accomplished through the budgeting and rate setting process described previously.

10.5 IMPLEMENTATION SCHEDULE

The approval process involves conducting a Public Hearing on the RFP. Citizen comments will be accepted during a 30 day comment period. MSD will address citizen comments and deliver a final plan to the KDOW for review, comment and approval.

This recommended plan identifies the priority for capital projects. MSD will begin implementation of the any 0 to 2 year projects immediately, subject to funding availability. The projects identified in the 3 to 10 year phase should proceed as the need arises, also subject to funding availability. MSD manages a capacity utilization tool to track available reserve capacity that can be used as the trigger for detailed planning.

The RFP should be reconsidered every 5 to 10 years. Changes in regulations, wasteload allocations, and development patterns may merit updates to the RFP.

SECTION 11: DOCUMENTATION OF PUBLIC PARTICIPATION

11.1 ADVERTISEMENT OF PUBLIC HEARING

Notice of Public Hearing

(Pursuant to 401 KAR 5:006 Sections 4 and 5, KRS 24 and 40 CFR 25.5 and 6)

Interested citizens of Jefferson County are invited to a public hearing sponsored by the Louisville and Jefferson County Metropolitan Sewer District. The meeting will start at 6:00 P.M. on Tuesday, February 20, 2018, at the Southwest Regional Library, 9725 Dixie Highway in Louisville, Kentucky.

MSD has completed an update to its Derek R. Guthrie Regional Water Quality Treatment Center Facilities Plan. The Facilities Plan details the recommended procedure for wastewater management within the Derek R. Guthrie Planning Area which encompasses much of Southern and Western Jefferson County. The recommended plan represents the alternative with the lowest present-worth cost, a minimal environmental impact and the highest capability for implementation. The recommended plan calls for wastewater to be collected and treated at the MSD Derek R. Guthrie Water Quality Treatment Center. The draft plan is available online at http://louisvillemsd.org/current-projects. Printed copies are available for review at the Metropolitan Sewer District office (700 W Liberty Street). These copies are available for review during normal business hours at this location until March 23, 2018.

The purpose of the public hearing is to discuss the draft plan and its contents. Verbal and written comments will be accepted at the public hearing. Written comments concerning the plan will also be accepted via mail or online at the link listed above until March 28, 2018. Written comments should be addressed to Colette Easter, Metropolitan Sewer District, 700 W. Liberty Street, Louisville, KY 40203.

11.2 ATTENDANCE AT PUBLIC HEARING

To be added at a later date.

11.3 PUBLIC COMMENTS

To be added at a later date.

11.4 RESPONSE TO PUBLIC COMMENTS

To be added at a later date.

SECTION 12: KDOW Checklist

Section 12: Regional Facility Plan Completeness Checklist and Forms

Requirements: Two (2) hard copies, one certified by a professional engineer licensed in Kentucky and one (1) non-certified digital copy of the regional facility plan and the planning area shapefile on a Compact Disc (CD) shall be submitted to the Cabinet. This completeness checklist should be completed and submitted with each regional facility plan.

Regional Planning Agency Name: Louisville and Jefferson County Metropolitan Sewer District
Date: April 13, 2017

SECTION 1

REGIONAL FACILITY PLAN SUMMARY- This section shall provide a brief summary of the information provided in the facility plan, including the following:

1.	Purpose of the plan and major problems evaluated in the plan.	S1 P1
2.	Recommended alternative chosen to remediate or correct the problems and/or serve the area of need identified in the plan. Also, include any institutional arrangements necessary to implement the recommended alternative(s).	S1 P2
3.	Estimated cost of implementing the proposed plan (including user fees) and the proposed funding method to be used.	S1 P2
4.	Planning agency commitments necessary to implement the plan.	S1 P2
5.	Schedule of implementation for projects.	S1 P2-3

SECTION 2

STATEMENT OF PURPOSE AND NEED- This section shall contain a brief description of the purpose and need for a submitting the facility plan. S2 P1-3

SECTION 3

PHYSICAL CHARACTERISTICS OF THE PLANNING AREA- This section shall delineate the planning area boundaries and describe key topographic, geographic and pertinent natural or man-made features of the area. Digital or electronic submission of the planning area boundary shapefile in a standard GIS format shall also be included. This section shall also include the following maps:

1.	One (1) up-to-date map, suitable for photocopying, indicate the planning area boundary, service area boundary, watershed boundaries, county lines, populated places, cities and/or towns and project areas or proposed planning period phases.	F 3-1
2.	One (1) up-to-date map, suitable for photocopying, include locations of wastewater treatment facilities (including package treatment plants), discharge location(s), collection lines (gravity, force main, interceptors), pump stations, public drinking water intake points and groundwater supply areas [Source Water Area Protection Plans (SWAPP) and/or Wellhead Protection Areas (WHPA)].	F 3-2
3.	One (1) seven and one-half (7 ½) minute USGS topographic map including the location of wetlands, delineation of the 100-year floodplain, surface water(s), and topography.	F 3-4 F 3-5

4.	If available, a local planning and zoning land use map.	F 3-6

SECTION 4

SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREA- The following characteristics of the planning area shall be discussed:

1.	Historical, current, and projected population in the planning area including wastewater contributions from industrial and commercial sources.	S4 P2
2.	Current and projected population in the existing service area and unsewered parts of the planning area	S4 P2-3
3.	Economic or social benefit to the affected community	S4 P3

SECTION 5

EXISTING ENVIRONMENT IN THE PLANNING AREA- Describe existing physical, biological, cultural, and other resource features within the planning area with an emphasis on those that may be impacted by the proposed plan or projects, including the following:

1.	Physical features such as surface and groundwater quality, water sources and supply, wetlands, lakes, streams, air pollution, floodplains, soils, geology, and topography	S5 P1-3
2.	Biological: Identify plant and animal communities in the planning area with an emphasis upon endangered and threatened species likely to be impacted	S5 P4
3.	Cultural: Describe archaeological and historical resources that may be affected by the proposed project	S5 P5
4.	Other Resource Features such as national and state parks, recreational areas, USDA Designated Important Farmland, and any other applicable environmentally sensitive areas	S5 P5-6

SECTION 6

EXISTING WASTEWATER SYSTEM- This section shall be prepared by a Professional Engineer licensed in Kentucky. A description of the existing facilities within the planning area shall include the following:

1.	On-site systems in the planning area	F 6-1 S6 P1
2.	Physical condition of the existing wastewater treatment plant(s) including the type, age, design capacity, process units, peak and average wastewater flows, current discharge permit limits, schematic layout of treatment plant. Include a narrative description of the capacity of the treatment plant to meet reliability and redundancy requirements as outlined in regulation 401 KAR 5:005, Section 13.	S6 P1-8
3.	Existing collection and conveyance system and its condition	S6 P9-14
4.	Existing biosolids disposal method	S6 P14
5.	Existing operation, maintenance and compliance issues	S6 P14-15

SECTION 7

FORECASTS OF FLOWS AND WASTE LOADS IN THE PLANNING AREA- This section shall be prepared by a professional engineer licensed in Kentucky and shall include:

1.	Current and projected commercial, industrial and residential growth for the proposed	S7 P1-3

planning period

2. A copy of the waste load allocation (WLA) issued by the DOW for new or expanded treatment plant projects — S7 P5-6

SECTION 8

EVALUATION OF ALTERNATIVES- This section shall be prepared by a professional engineer licensed in Kentucky and include an assessment of alternatives to determine the appropriate facilities that will meet the wastewater needs of the planning area and provide benefits that are cost-effective and environmentally sound. The section shall include:

1. No-action alternative — S8 P1
2. Optimization of existing facilities — S8 P2
3. Regionalization — S8 P3
4. Other alternatives
5. Detailed cost analysis along with 20 year present worth analysis for each alternative — S8 P5-11
6. Recommended alternative — S8 P5, S8 P8-11

SECTION 9

CROSS-CUTTER CORRESPONDENCE AND MITIGATION- Each facility plan shall include cross-cutter correspondences to and from each agency related to the following four environmental and cultural concerns:

1. Threatened and Endangered Species: The U.S. Fish and Wildlife Service- Kentucky Ecological Services Field Station and the Kentucky Department of Fish and Wildlife Resources
2. Historical Resources: The Kentucky Heritage Council State Historic Preservation Office
3. Aquatic Resources: The US. Army Corps of Engineers (Louisville, Nashville, or Huntington Districts).
4. Agricultural Resources: The local office of the Natural Resources Conservation Service (NRCS) or USDA Service Center

SECTION 10

EVAULATION OF RECOMMENDED REGIONAL FACILITY PLAN- This section of the facility plan shall summarize the critical components of the recommended plan.

1. Environmental impacts — S10 P1
2. Institutional structure — S10 P1
3. Funding plan — S10 P1
4. Current and projected residential user charge rate based on 4,000 gallon usage per month — S10 P2
5. Implementation schedule — S10 P2

SECTION 11

DOCUMENTATION OF PUBLIC PARTICIPATION- The section shall include a copy of the newspaper advertisement/proof of publication, attendance sheet, and public comments.